

described as lower at rest in athlete than sedentary subjects. The aim of this study was to verify that atrial diastolic function is involved in exercise capacity.

Methods: 38 subjects, divided in three groups, athlete (A), chronic heart failure (CHF), sedentary control (C), made a maximal triangular exercise with VO₂ measurement on cycle ergometer. A Doppler echocardiography was performed at rest and immediately after maximal exercise in upright position. A and E wave were measured, delta E/A representing the difference between E/A at rest and E/A at exercise.

Results: At rest E/A ratio was higher in (A) (1.76 ± 0.42 ; $p < 0.001$), and lower in CHF (0.84 ± 0.48 ; $p < 0.05$) versus (C) (1.15 ± 0.45). In healthy subjects (group A and C) the increase of A wave during exercise was correlated with VO₂ max. ($r = 0.59$; $p < 0.01$). E/A decreased during exercise and delta E/A was also correlated with VO₂ max. ($r = -0.85$; $p < 0.001$), but not in CHF.

Conclusion: The primary results suggest that A wave, active atrial component of diastolic function, seems to represent a "atrial reserve", available at exercise to maintain or increase cardiac output in healthy subjects, but not in CHF patients.

1210 Use of Algorithms and Computerized Models in Ischemic Heart Disease

Wednesday, April 1, 1998, Noon-2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 1:00 p.m.-2:00 p.m.

1210-47 Effect on Costs of ACC/AHA Guidelines for Preoperative Cardiac Risk Assessment Before Aortic Surgery

J.B. Froehlich, P. Russman, D.J. Karavite, N. Erdem, M. Freedman, C.G. Wise, G.B. Zelenock, T.W. Wakefield, J.C. Stanley, K.A. Eagle
University of Michigan, Ann Arbor, Michigan, USA

The ACC/AHA Joint Task Force Guidelines recommend a stepwise algorithm approach to cardiac risk assessment prior to noncardiac surgery. We studied a strategy to implement the ACC/AHA Guidelines, by comparing 95 consecutive elective abdominal aortic surgery patients at the University of Michigan (7/95 to 12/96) with 102 historical controls (1/93 to 12/94), after a program consisting of lectures, a new preop clinic, use of algorithm cards, and algorithm-embedded clinic notes. We previously reported a significant reduction in resource utilization, (stress test use, cath and PTCA), without effect on outcomes of death or MI. Analysis of total cost per case for surgical admission, cost of preoperative evaluation (PREOP COST) and length of stay (LOS) was performed, excluding 12 subjects for whom data was not available. Total direct costs of preop evaluation and surgical admission were compared using TSI data and cost:charge ratios.

Results: We found a decrease in total costs for vascular surgical admission of >50% ($P < 0.001$). Preop costs fell (\$1,087 \pm 237 to \$250 \pm 88; $p < 0.001$) as did length of stay (20.8 to 15.3 days; $p < 0.02$). Using simple educational tools, we demonstrated a reduction in total costs, PREOP COST and LOS in patients undergoing elective aortic surgery. The combination of important cost savings with preserved outcomes argues for widespread adoption of these guidelines.

1210-48 PET Myocardial Perfusion Imaging Cuts the Cost of Coronary Disease Management by Eliminating Unnecessary Invasive Diagnostic and Therapeutic Procedures

M. Merhige, T. Houston, V. Shelton, J. Kay, G. Stern, J. Oliveno, E. Fast, D. Saiki, J. Shanahan, C. Temo, B. Rueda, B. D'Arcy, Buffalo Cardiology & Pulmonary Associates, P.C.; SUNY at Buffalo, Buffalo, NY, USA

We hypothesized that myocardial perfusion imaging with Rb-82 PET results in cost savings in coronary disease (CAD) management, compared with SPECT imaging, because of improved test accuracy. We compared procedure costs and outcomes in 1,482 sequential patients (pts) referred for CAD evaluation with PET, with 102 pts imaged with SPECT who were matched for pretest likelihood of coronary disease with the first 102 PET pts. Cost was calculated: SPECT-\$1,000, PET-\$1,850, Angio-\$4,800, PTCA-\$10,000, CABG-\$40,000. Average 6 month follow-up was obtained (3 mos-1 year).

	SPECT	PET	P Value
n	102	1482	
Pretest Prob	0.36 \pm 0.14	0.38 \pm 0.16	
Angio Rate	32.4%	14.4%	0.00001
False Positive	15.2%	5.1%	0.0001
CABG Rate	6.9%	3.5%	0.037
PTCA Rate	2.9%	2.5%	0.40
Total Mortality	0.020	0.016	0.38
Cardiac Mortality	0.020	0.008	0.09
Acute MI	0.029	0.011	0.06
Cost Per Patient	\$5,592	\$4,106	

Conclusion: Management with PET in pts with an intermediate risk of CAD results in: 50% reduction in angiography & CABG; excellent short term outcomes, and 25% reduction in CAD management costs.

1210-49 Prediction of In-hospital Survival After Sudden Cardiac Death: Derivation and Validation of a Clinical Model

P.A. McCullough, K.J. Tobin, J.K. Kahn, W.W. O'Neill, R.J. Thompson
Henry Ford Hospital, Detroit, Michigan; William Beaumont Hospital, Royal Oak, Michigan, USA

Accurate and early prediction of outcomes after witnessed cardiac arrest has not been achieved from previous works in the literature. Consequently, patients with sudden cardiac death (SCD) are often left to "declare themselves" in terms of in-hospital survival. Recent studies indicate that the majority of SCD patients have coronary occlusions making the early prediction of vital outcome critical in decision-making regarding revascularization and other aggressive measures. Using multivariate analyses, we derived a prediction model from 127 witnessed, out-of-hospital SCD cases and then tested the model prospectively in 62. A SCD score comprised of the emergency room assessment of time to return of spontaneous circulation (ROSC), presenting systolic blood pressure (SBP), and initial neurologic exam was derived from the initial cohort of 127. This scoring scheme was then applied to the validation group and receiver operator characteristic curve (ROC) analysis was used to determine its prospective utility. Caregivers were unaware of the SCD scoring procedure. The two groups were similar with respect to baseline characteristics (age: 69 \pm 12 vs. 65 \pm 14, $p = 0.10$, and overall survival: 42% vs. 53%, $p = 0.51$). The diagnostic accuracy of the most favorable score (ROSC < 25 min, SBP > 90 mmHg, and arousable) in predicting survival to discharge was 71% and 73% for the two groups. The area under the ROC curves was found to be 0.81 and 0.91, $p = 0.95$, indicating validation of the SCD score as a highly useful and consistent decision-support tool.

Conclusions: A clinical score can be obtained in the emergency department that provides important, real-time, prognostic information regarding which patients are likely to survive. This decision-support tool, therefore, may be used in family counseling and in weighing the options of early angiography and revascularization, as well as other resource-intensive therapies.

1210-50 Evaluation of Acute Chest Pain in the Diabetic Patient Without Known Coronary Artery Disease

F. Lopez-Jimenez, L. Goldman, P.A. Johnson, E.F. Cook, K. Fleischmann, E.J. Orav, T.H. Lee, Brigham and Women's Hospital, Boston, MA, University of California at San Francisco, CA, USA

To evaluate if diabetics without known coronary artery disease (CAD) who present to the emergency department with chest pain have: 1) a higher rate of myocardial infarction or major cardiac complications, and 2) differences in the quality of the chest pain among those who rule in myocardial infarction, compared with non diabetic patients, we prospectively evaluate 2,694 subjects presenting with acute chest pain without known CAD.

Results: Diabetes was present in 301 (11%) patients. Compared with non-diabetics, patients with diabetes were more likely to be ≥ 60 years old (51% vs. 20%), and to have a history of hypertension (70% vs. 35%) or high blood cholesterol (35% vs. 19%). A discharge diagnosis of myocardial infarction was made in 25 diabetics (8%) and in 148 non-diabetics (6%) ($p = 0.16$). A major cardiac complication occurred in two patients with diabetes (0.7%) and in 20 patients without diabetes (0.8%) ($p = NS$). Patients with and without diabetes who had atypical chest pain complaints had similar rates of myocardial infarction (3% and 4%, respectively; $p = 0.6$). Despite the lack of difference in outcomes, diabetics were more likely to be hospitalized (67% vs. 47% $p = 0.001$) both before and after adjusting for clinical and electrocardiographic data.

Conclusions: For patients with acute chest pain without a prior history of CAD, diabetes was not associated with a higher rate of myocardial infarction or complications. However, diabetes was associated with a higher rate of hospitalization in this population, suggesting that physicians have a lower threshold for admission to the hospital of patients with diabetes.